

Continuous Monitoring in the Rio Grande Basin



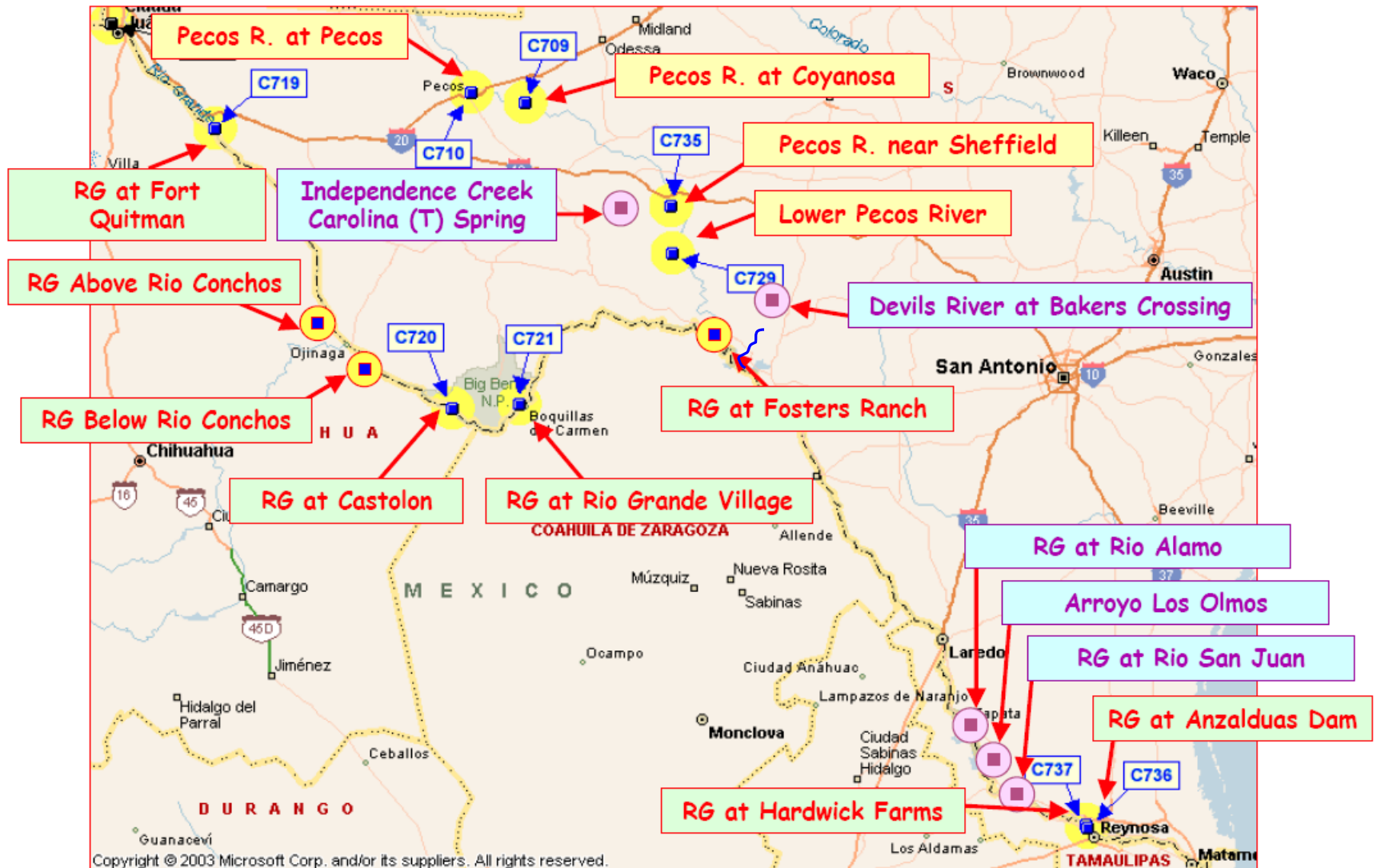
Christine Kolbe
Surface Water Quality Monitoring Team
Texas Commission on Environmental Quality



The Rio Grande Basin



Continuous Water Quality Monitoring Stations in the Rio Grande Basin

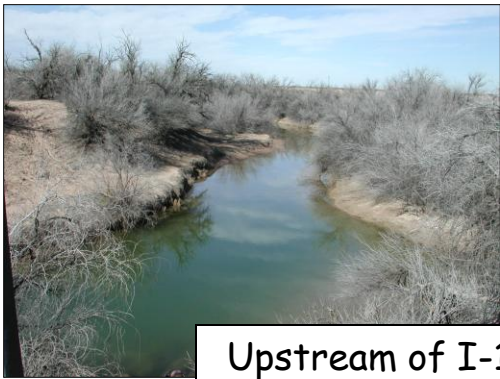


Pecos & Devils River CWQMN Sites

To monitor the effects of salt cedar eradication which includes,

- ❑ Increasing Flow
- ❑ Decreasing Salinity

Pecos River

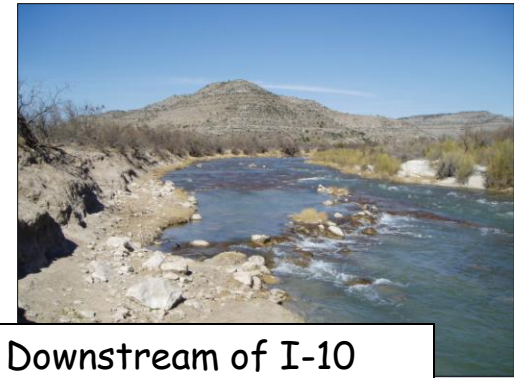


Upstream of I-10



To monitor changing water quality

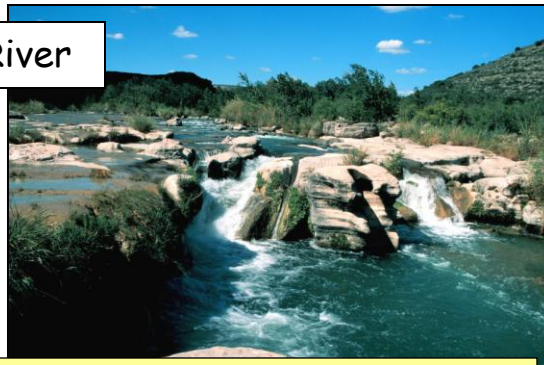
- ❑ Increasing Oil & Gas Activity
- ❑ Presence of Golden Algae



Downstream of I-10



Devils River



To monitor changing water quality

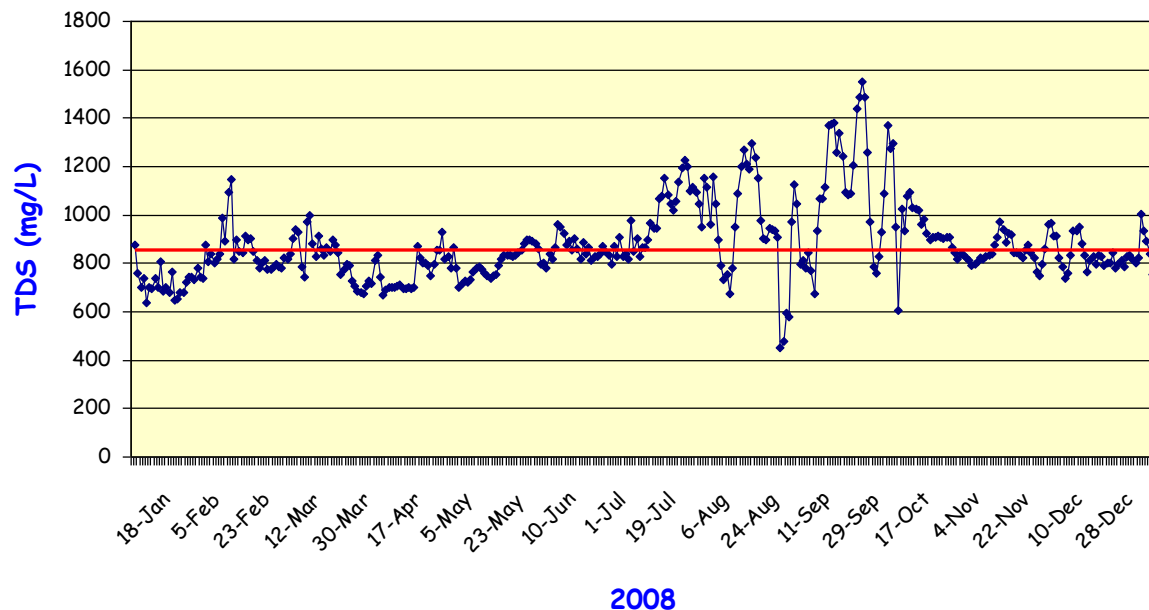
- ❑ Increasing Oil & Gas Activity



Operated by:

TCEQ Midland and Laredo Regional Offices

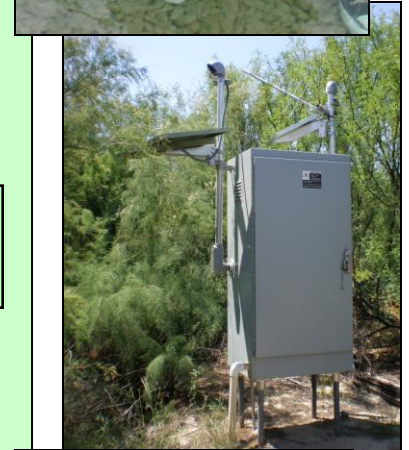
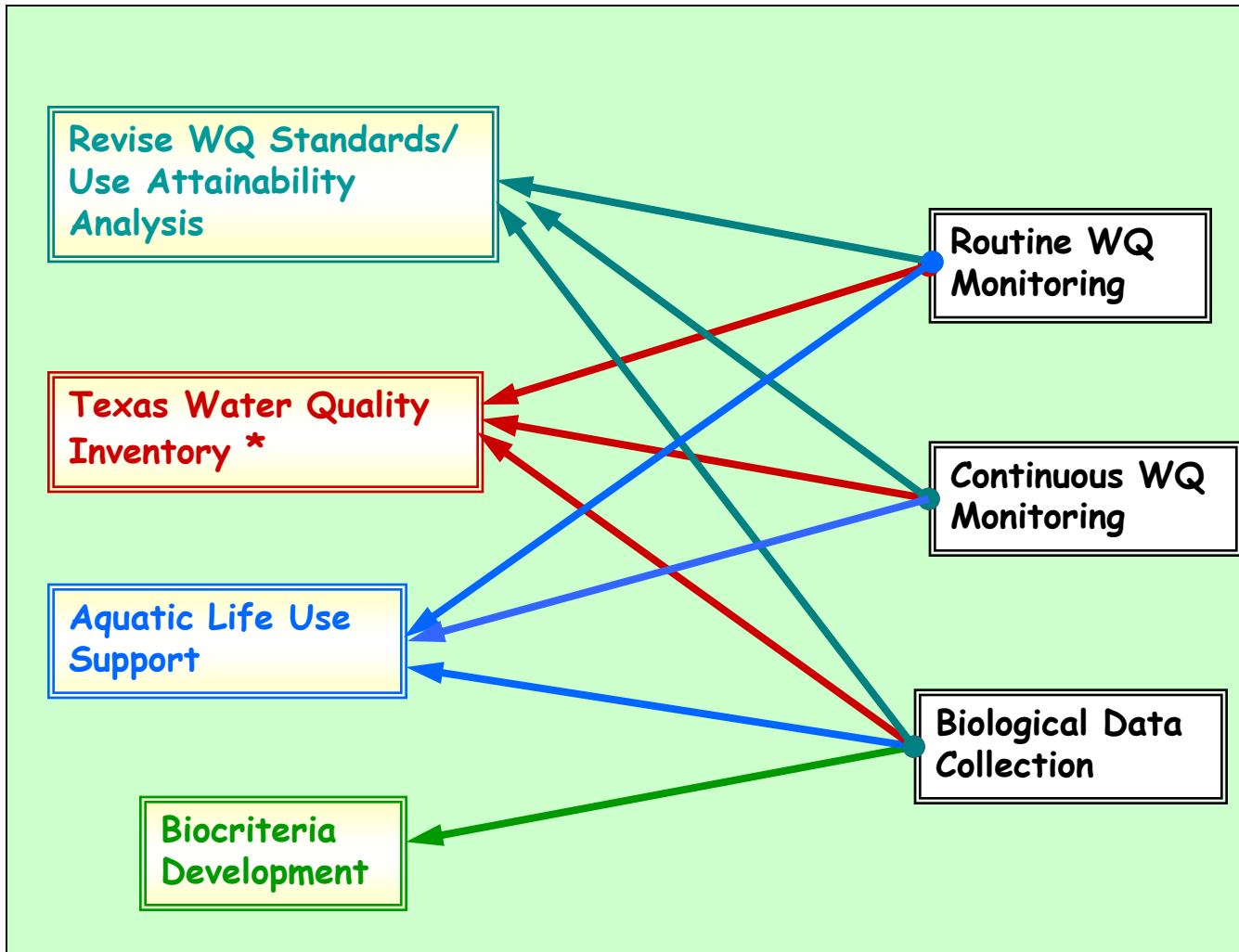
Rio Grande Valley CWQM Sites



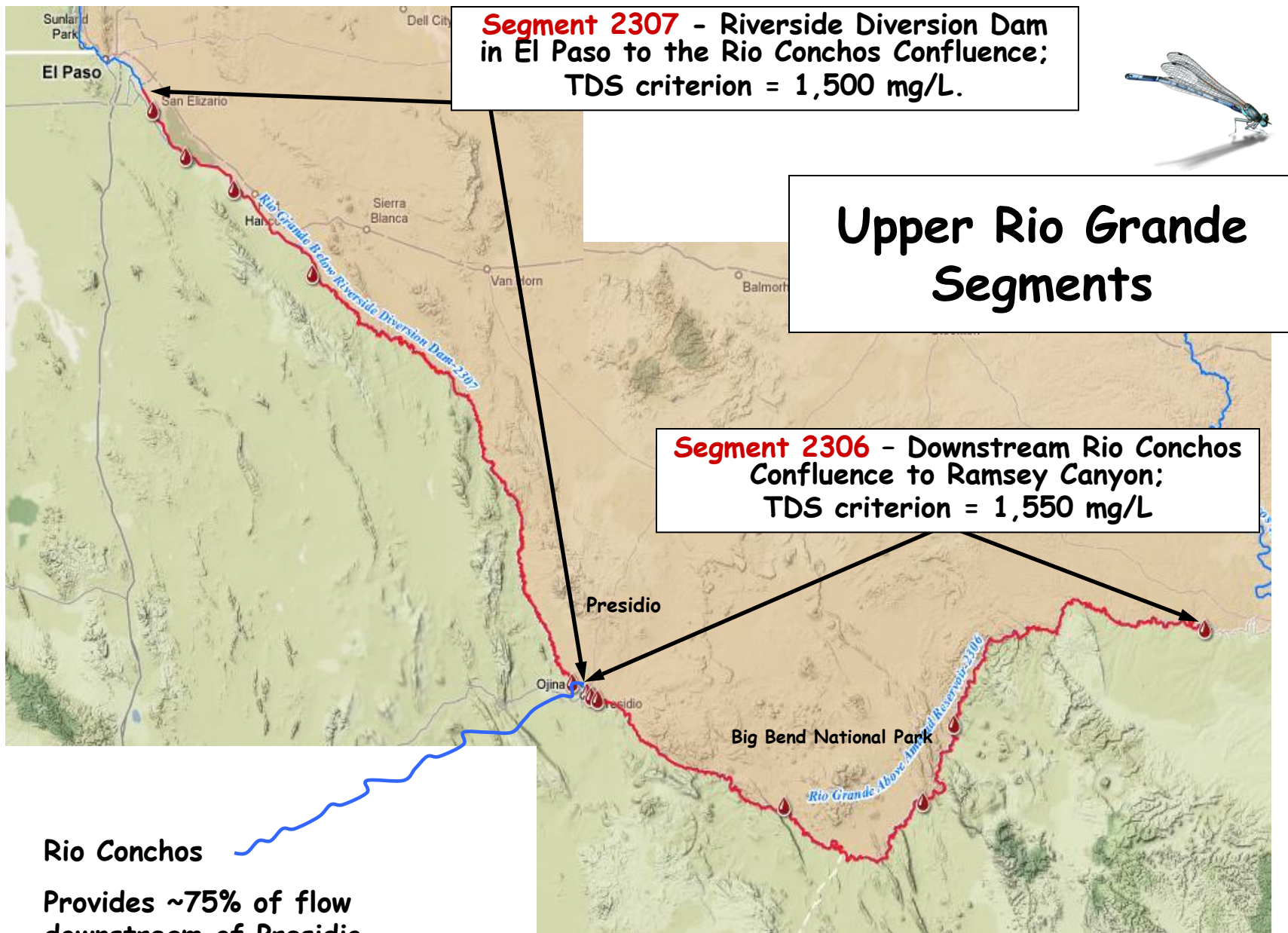
Used by Rio Grande Watermaster to manage water for irrigators.

TDS Criterion = 880 mg/L
The system triggers an email alert
when TDS is > 1,000 mg/L

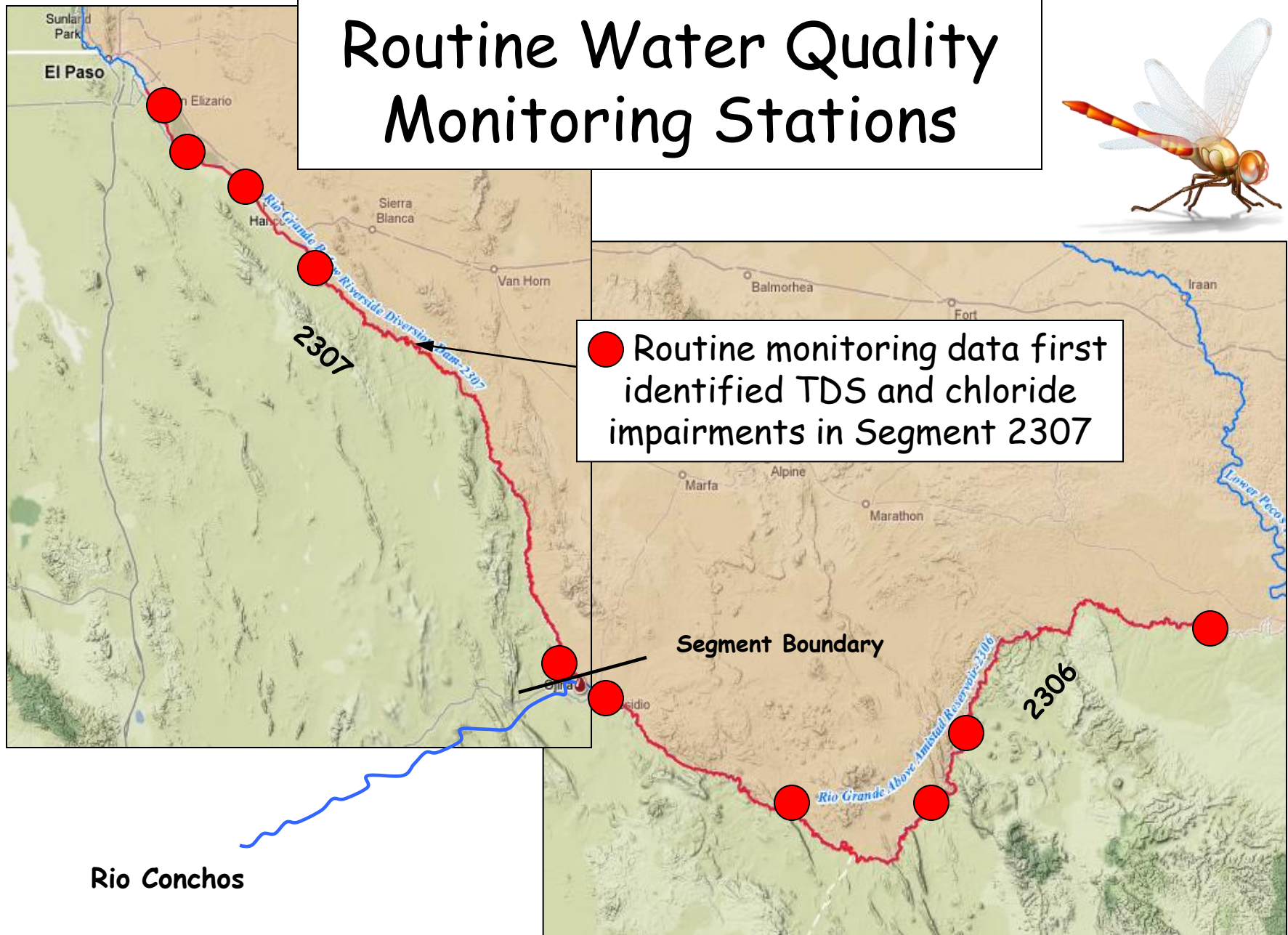
Using WQ & Biology to Meet Regulatory Needs

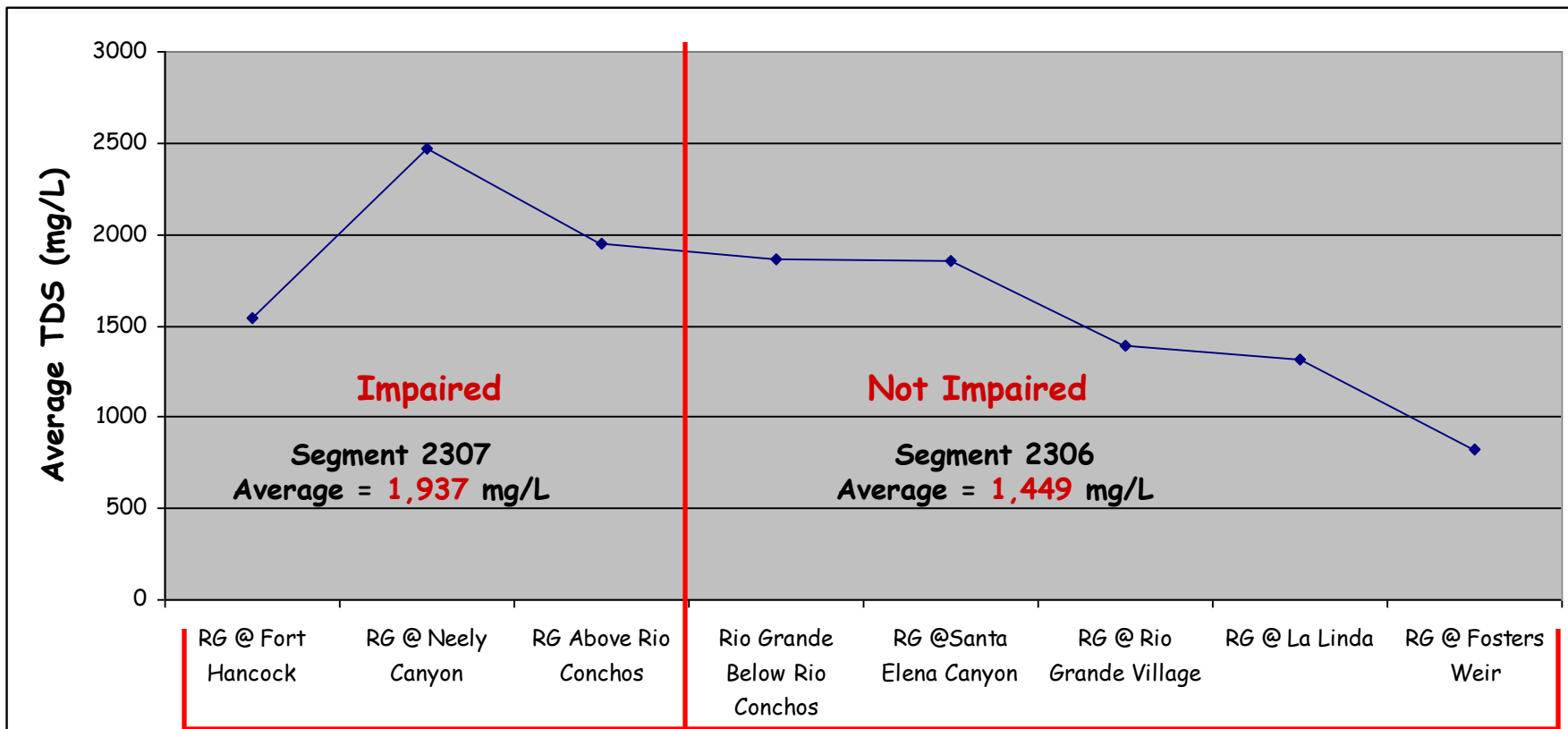


* Required every 2-years by Sections 305(b) and 303(d) of the Clean Water Act

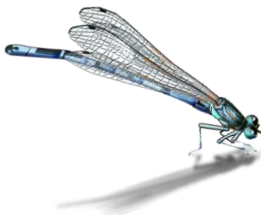


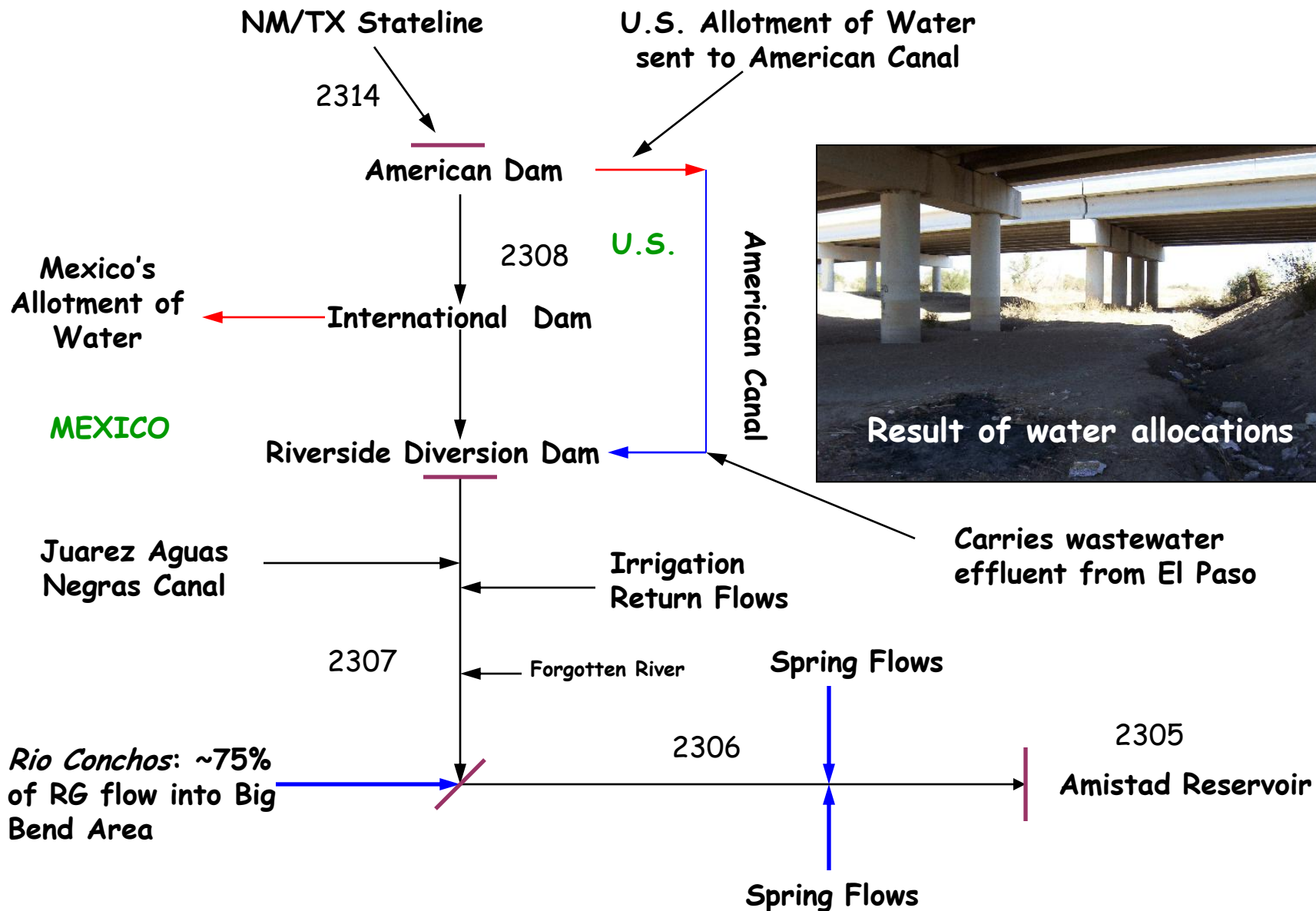
Routine Water Quality Monitoring Stations





Sample Locations



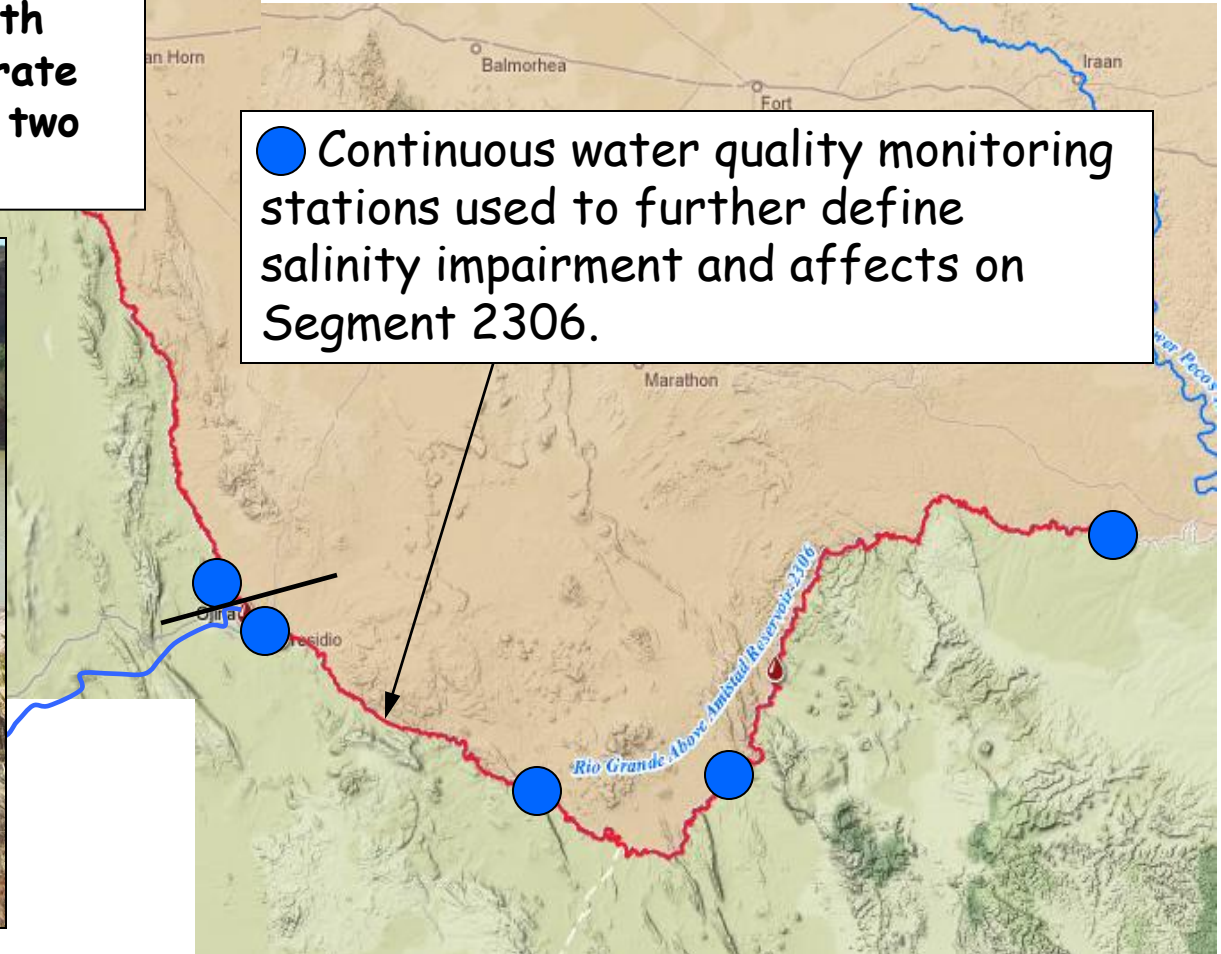


Continuous Water Quality Monitoring Stations

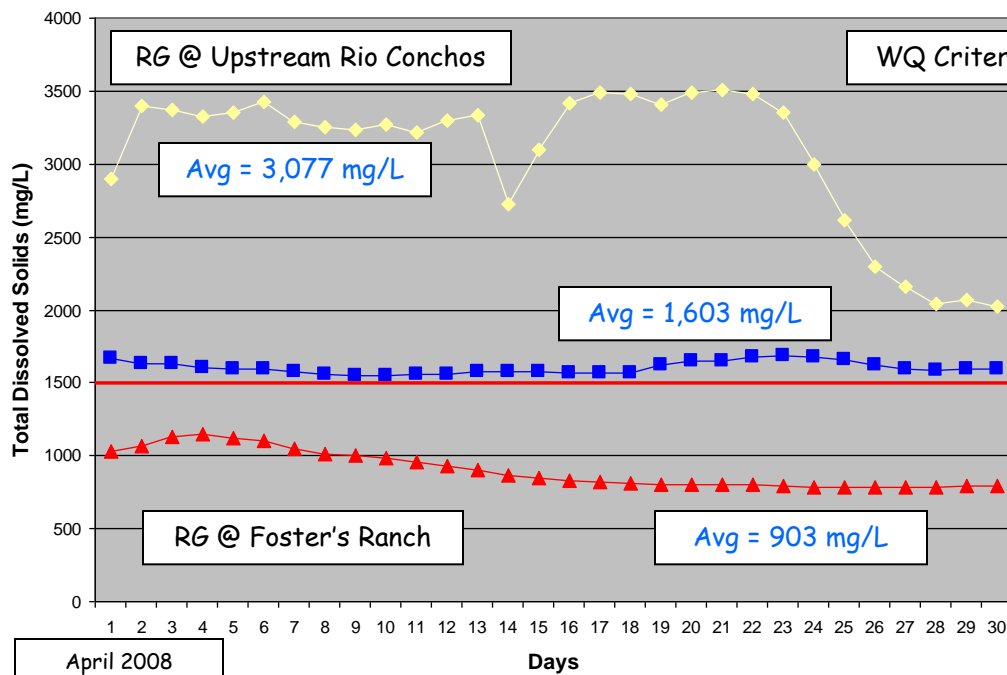


TCEQ has contracted with USGS to install and operate the five lower sites and two flow sites in BBNP.

● Continuous water quality monitoring stations used to further define salinity impairment and affects on Segment 2306.



Salinity in the Upper Rio Grande



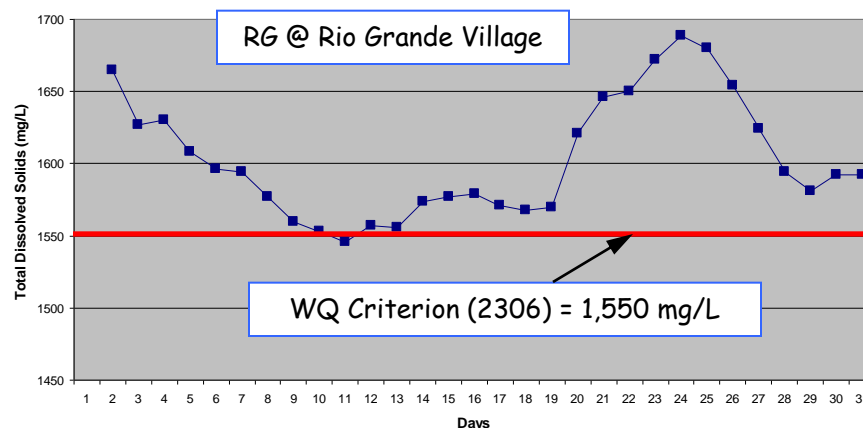
Segment 2307 currently listed as impaired for TDS and chloride.

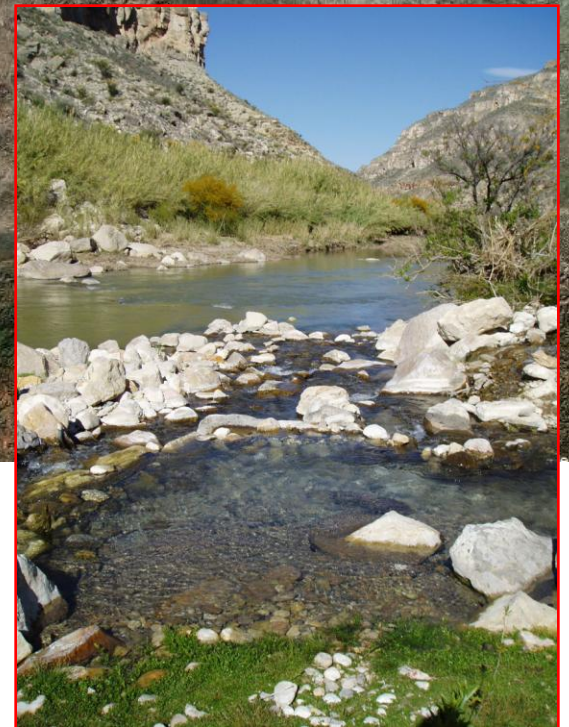
Using Continuous Data to Determine TDS
Specific Conductance x 0.65 = TDS

Standards compliance for TDS is based on the average of all samples in a segment.

Spring flow accounts for overall standards compliance in Segment 2306.

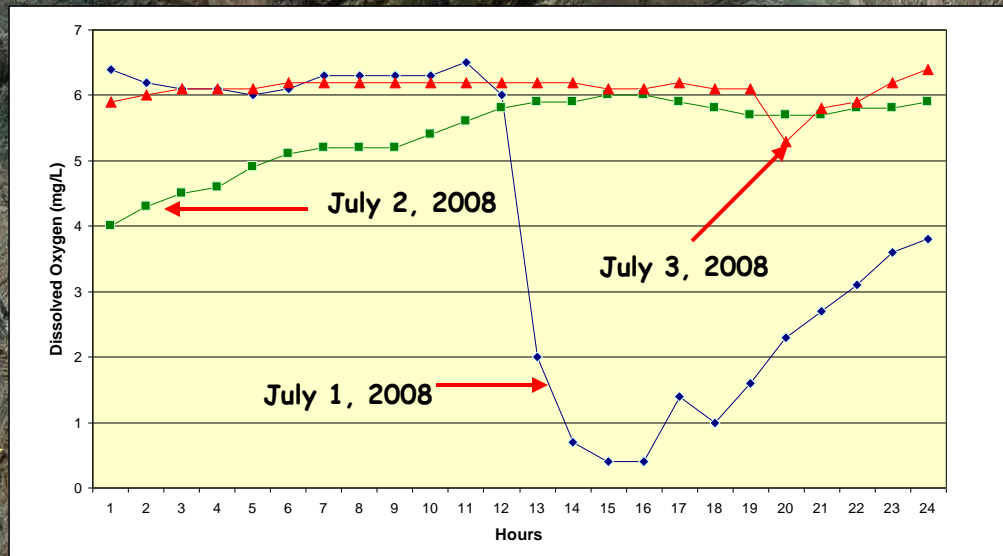
Avg for RGV + Foster's Ranch = 1,253 mg/L





~Start of Spring Flow

Unexpected Benefits of Continuous Monitoring Data

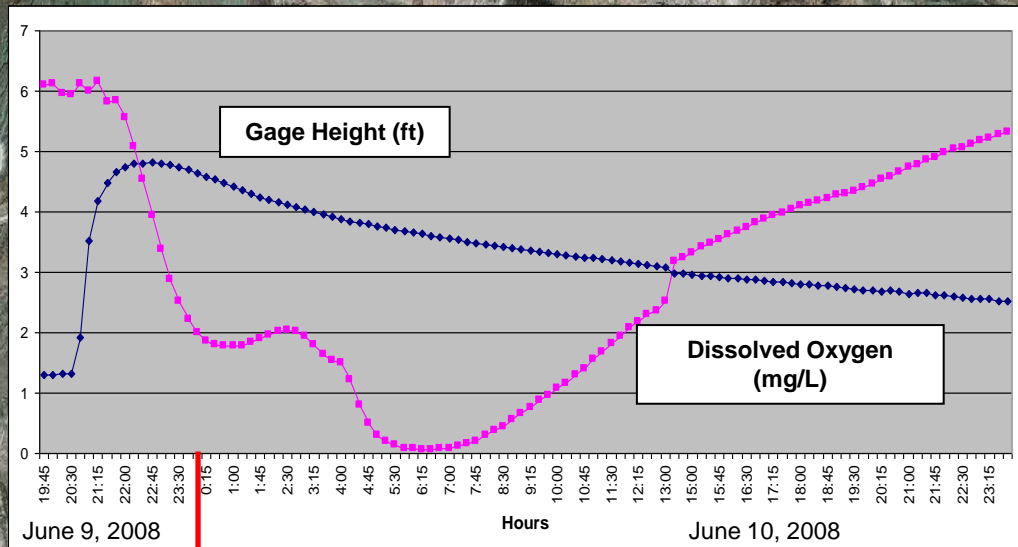


Castolon



Ejido de Santa Elena

Rise in flow + decrease in DO = fish kills documented at BBNP



Rio Grande Village

El Llano

Ejido Jabonillos

Santa Rosa
Melón

El Olan

Anzalduas Reservoir Hardwicke Farm C737

CAMS 737 Anzalduas Reservoir Hardwicke Farm C737

- State: Texas
- County: Hidalgo
- City: Mission
- Address: Anzalduas Reservoir
- Site coordinates:
 - Latitude: 26° 09' 33" North (+26.159167°)
 - Longitude: 98° 20' 58" West (-98.349444°)
 - Elevation: 24 m (79 ft)
- Maintained by: TCEQ Harlingen Regional Office

[Area Map](#)

Wide aerial
photo not
available

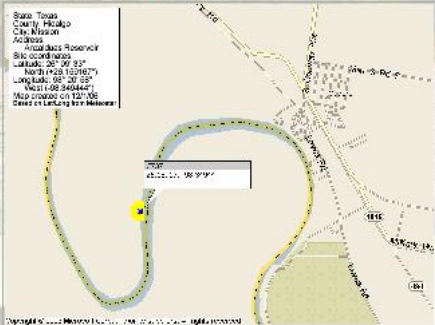
Overall site
view not
available

Closeup
aerial
photo not
available

[Street
level Map](#)

Upstream View not available

Left Bank
View not
available



Right Bank
View not
available

Downstream View not available

[Current Measurements at Anzalduas Reservoir Hardwicke Farm C737](#)

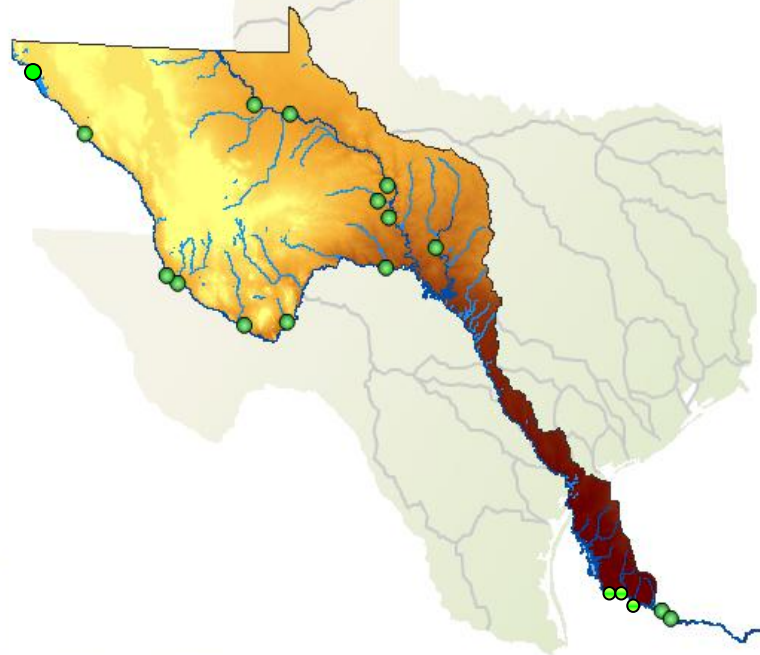
[Monthly Summary Report for Parameters at Anzalduas Reservoir Hardwicke Farm C737](#)

[Yearly Summary Report for Parameters at Anzalduas Reservoir Hardwicke Farm C737](#)

- Real-time monitoring since: Monday, December 4, 2006
- Current status: Active
- Parameters currently being monitored:
 - Water parameters:
 - Surface Water Temperature
 - Surface Specific Conductance
 - Total Dissolved Solids
 - Surface Dissolved Oxygen

Accessing Data on the Web

Rio Grande Basin



<http://www.texaswaterdata.org>

Available Data



Anzalduas Reservoir Hardwicke Farm C737 Daily Summary

Water quality data available
in table format daily,
monthly, yearly

CAMS 737 Anzalduas Reservoir Hardwicke Farm C737 Select a different site

Month: Day: Year: Time Format:

January 5 2009 12 Hour (AM/PM) Generate Report

☒ Highlight validated data

Parameter Measured	Morning									
	Mid	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00
Surface Water Temperature	20.0	20.0	19.9	19.8	19.7	19.7	19.6	19.6	NA	NA
Surface Specific Conductance	1124	1120	1116	1114	1112	1111	1108	1108	NA	NA
Total Dissolved Solids	730.567	727.951	725.124	724.149	722.426	722.150	720.151	720.233	NA	NA
Surface Dissolved Oxygen	7.2	7.3	7.3	7.3	7.3	7.3	7.3	7.3	NA	NA
Surface Water pH	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	NA	NA
Salinity	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	NA	NA
Parameter Measured	Morning									
	Mid	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00

Maximum values for each parameter are **bold** within the table. Minimum values are **bold italic**.

Dissolved Oxygen

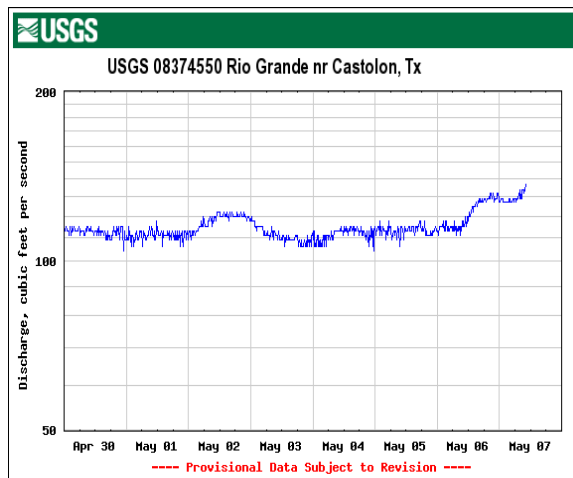
pH

Specific Conductance

Total Dissolved Solids

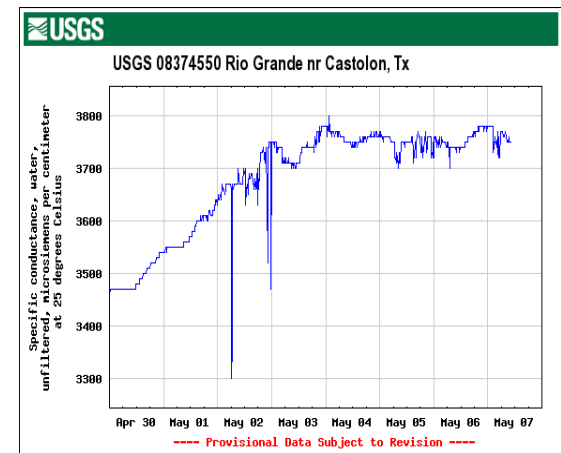
Water Temperature

<http://texaswaterdata.org>



Flow and water quality
data available as a graph
or in a table format

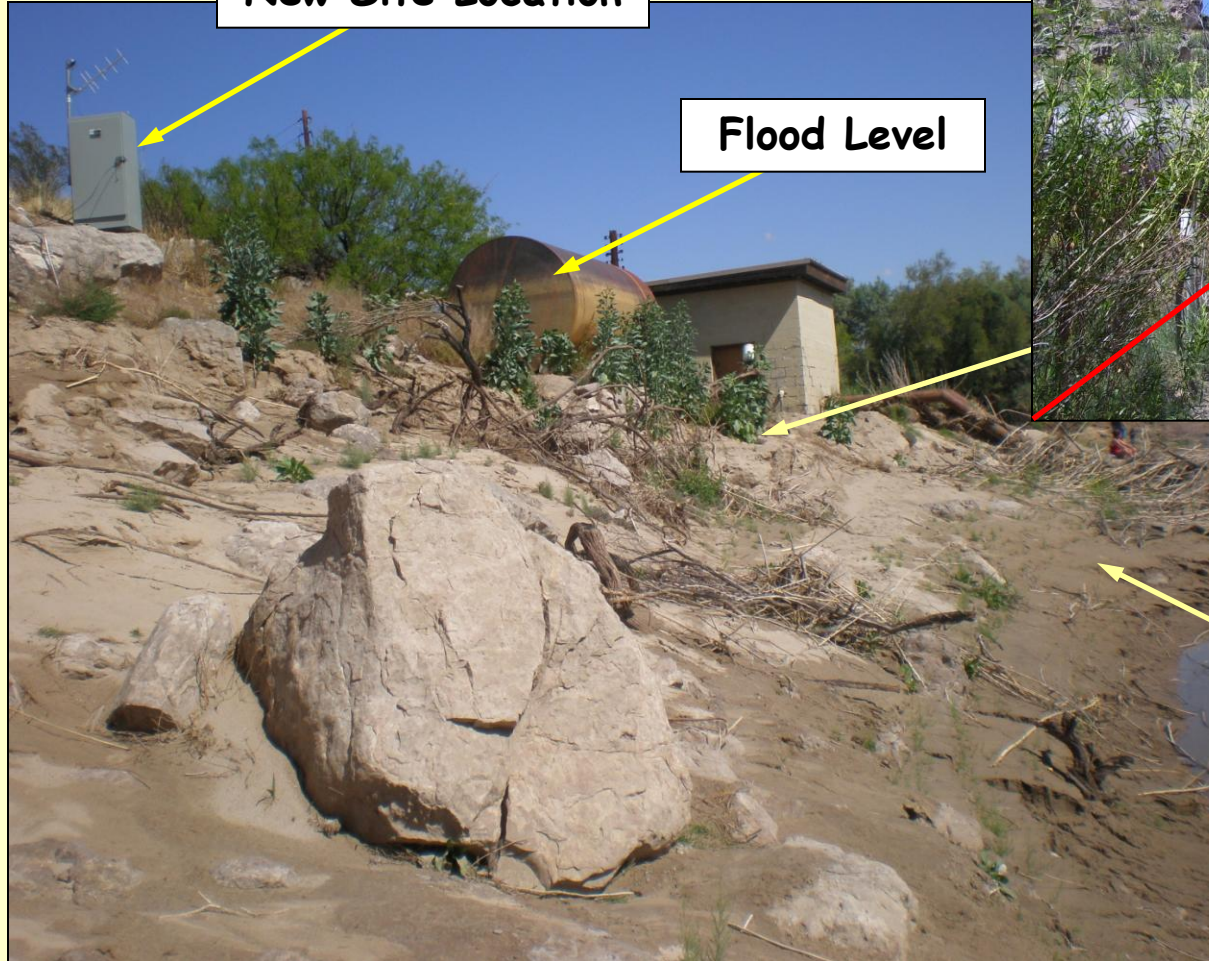
<http://tx.usgs.gov/>



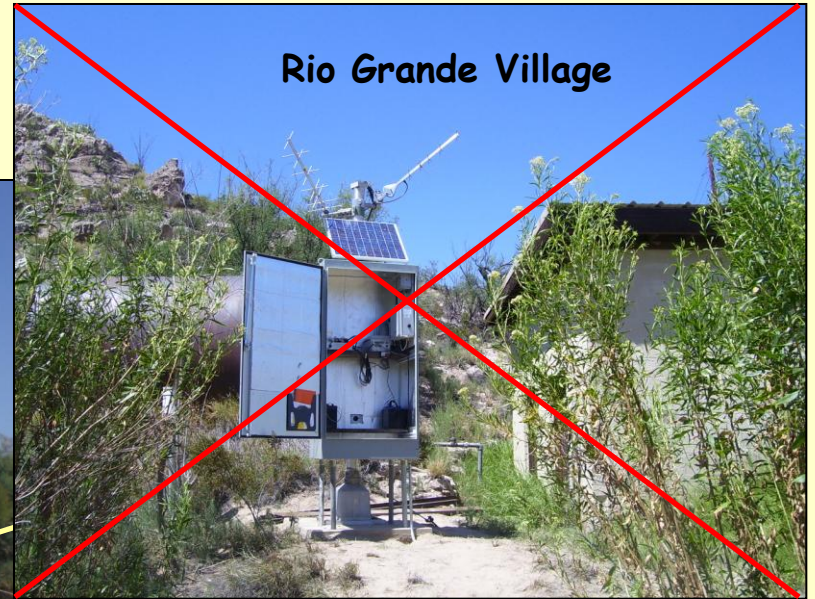
The Risk of CWQM Sites

New Site Location

Flood Level



Rio Grande Village



Original Location



*Site lost during September 2008
flood with flows $\geq 55,000$ cfs*



Current Site Costs

- Flow
 - Installation (additional sites): \$32,000
 - O & M: \$18,000/site/year
- Water Quality Sites
 - O & M: \$50,000-60,000/site/year





Future Needs



- Currently funded for both water quality and flow through 8/31/2009.
- Applied for 604(b) stimulus funds to continue the five CWQM stations including the two flow gages in BBNP to 8/31/2010. Received verbal confirmation of approval; waiting for formal letter.
- Need funding to continue the upper Rio Grande sites beyond 8/31/2010.



Contact Information

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